

Public Health History - Tuberculosis

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Each year a bacterial disease called tuberculosis infects 8 million people worldwide and kills 3 million. This contagious disease is spread from person-to-person on airborne droplets that are expelled from the lungs of an infected person when he coughs, sneezes or talks. The bacteria usually take root in the air sacs of the lungs. In a healthy person, the bacteria are quickly surrounded by a wall of cells, which limits their spread. This enclosed infection is called *latent TB* and can last throughout a person's life without ever causing medical symptoms or being spread to other people.

However, if a person infected with latent TB develops a weakened immune system – through HIV infection, malnutrition, aging or other causes – the TB can become active again and spread throughout the lungs or other tissues. This person now has *active TB* and can infect other people.

Tuberculosis has been around since ancient times. Egyptian mummies from 2400 BC show signs of tuberculosis. In 460 BC Hippocrates talked about tuberculosis as the most widespread disease of the times and said that it was almost always fatal.

In 1679 Sylvius wrote about the disease as a consistent and characteristic change in the lungs. In 1699 Italian literature identified tuberculosis as contagious, and in 1720 an English physician theorized that tuberculosis was caused by tiny living creatures. He stated that TB could be passed from person-to-person by sharing a bed or a meal, but not necessarily by sharing a simple conservation.

The first treatment for TB began in 1850s with a regimen of fresh air and good nutrition at sanatoriums. It wasn't until 1943 that antibiotics were first successfully used against TB. With research showing that the bacteria develop mutant strains that are resistant to some antibiotics, a regimen of four antibiotics given consistently for a period of six months was soon adopted as the standard treatment for tuberculosis.

Today this antibiotic regimen is administered through direct observed therapy – which means a medical professional observes the patient as he takes the medication. This encourages patients to complete the entire course of antibiotics. Those who do not risk developing an antibiotic resistant strain of TB that is much harder to treat.

The World Health Organization estimates that 95% of the 8 million people with tuberculosis live in developing countries. Wealthy industrialized countries with good public health care systems should be able to keep TB under control. However, the emergence of multi-drug resistant TB and the increase in HIV infection mean that even the United States must focus on developing better tools to fight TB.

Currently experts are working to create a blood test for TB, as well as a rapid diagnostic test. Epidemiology and surveillance of TB are becoming more sophisticated. New drugs are being researched that could simplify the course of therapy or combine all four antibiotics into one pill. A host of new potential vaccines are being developed. And the entire DNA sequence for the TB bacteria has been mapped, giving researchers a complete blueprint to work from.

Many people think that tuberculosis (TB) is a disease of the past and no longer threatens us, but the Centers for Disease Control and Prevention (CDC) estimate there are currently 9 to 14 million people in the U.S. infected with TB. About 10% of those people will develop active TB at some point in their lives.

The fact that this number is an all-time low for the U.S. may encourage some people to become complacent. But now is the time for action! We must continue working diligently to control and eliminate tuberculosis, in the United States and around the world.

For more information on tuberculosis, contact the Springfield-Greene County Health Department at (417) 864-1658.

Tuberculosis Timeline

460 BC – Hippocrates writes about “consumption” as the most widespread disease of the time and reports that it is almost always fatal.

1679 – Sylvius writes about the disease as a consistent and characteristic change in the lungs.

1720 – English physician Benjamin Marten theorizes that tuberculosis was caused by tiny living creatures. He states that TB could be passed from person-to-person by sharing a bed or a meal, but not necessarily by sharing a simple conservation

1854 – Hermann Brehmer publishes his doctoral dissertation “Tuberculosis is a Curable Disease” after being cured himself while on sabbatical in the Himalayan mountains.

1865 – Jean-Antoine Villemin postulates that a specific microorganism is responsible for TB, after he shows it can be passed from humans to cattle and from cattle to rabbits.

1882 – Robert Koch develops a staining technique that allows him to see *Mycobacterium tuberculosis*, the bacteria that cause TB.

1876 – Robert Koch proves that particular microorganisms cause specific diseases, such as cholera, tuberculosis, anthrax, leprosy, plague and malaria.

1882 – Robert Koch identifies tubercle bacillus.

1900 – Tuberculosis is listed as the second leading cause of death in the United States after pneumonia/influenza.

1927 – Tuberculosis vaccine is developed.

1943 – Antibiotics are successfully used to treat tuberculosis.

1976 – Multi-drug resistant tuberculosis emerges.

1978 – The Centers for Disease Control and Prevention (CDC) report the first outbreak of a new drug-resistant tuberculosis.